

Customer No.: 31561
Application No.: 10/604,246
Docket No.: 10038-US-PA

REMARKS

Present Status of the Application

It is noted with a great appreciation that the Examiner indicated that claims 10 and 13 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 8-19 are pending of which claims 8, 10 and 13-14 have been amended, claim 9 has been canceled without prejudice or disclaimer and claims 15-19 have been newly added in order to more explicitly describe the claimed invention. Support for amendment to claim 8 can be found at lines 7-8 of paragraph [0029], where it is recited that "the reference range of value of the operation parameter is predetermined by extending the measured value into a reference range of value of a normal RTA process". Therefore, it is believed that no new matter adds by way of amendments made to claims or otherwise to the application. For at least the following reasons, Applicants respectfully submit that claims 8, 10-14 and 16-19 patently define over prior art of record and reconsideration of this application is respectfully requested.

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Discussion of the Claim Objections

The Office Action objected to claim 10, because line 10 of claim 10 appears to have an extra comprise.

In response thereto, Applicants would like to thank the Examiner for pointing out the informality and accordingly amended claim 10. Reconsideration is respectfully requested.

Discussion of the claim rejection under 35 USC 103

The Office Action rejected claims 8, 9, 11-12 and 14 under 35 USC 103(a) as being unpatentable over Roy et al. (US patent 6,521,496, hereinafter Roy) in view of Rohner et al. (US patent 5,831,249, hereinafter Rohner).

In rejecting the above claims, the Examiner stated that Roy discloses a RTA process similar to the RTA process of the present invention except for the step of comparing a measured value of an operation parameter with a reference range of value of the operation parameter; and proceeding with a second RTA step by maintaining the reaction chamber at the main process temperature when the measured value of the operation parameter is in between the reference range of value of the operation parameter. However, the Examiner relied upon Rohner, in Figure 4, and columns 5-8, lines 01-08, teaches comparing (step 80) a measured value of the operation parameter (i.e. temperature) with a reference range value of the operation parameter; and proceeding a second RTA step (step 82) by maintaining the chamber at

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the main process temperature when the operation parameter is in between the reference range of value of the operation parameter. It would have been obvious to one skilled in the art to modify Roy by incorporating comparing a measured value of the operation parameter (i.e. temperature) with a reference range value of the operation parameter; and proceeding a second RTA step (step 82) by maintaining the chamber at the main process temperature when the operation parameter is in between the reference range of value of the operation parameter, as taught by Rohner to provide immediate detection of a device malfunction and prevent irreversible damage to a lot of wafers.

Applicants respectfully disagree and traverse the above rejections as set forth below. Independent claim 8, as amended, and newly added proposed claim 15 are allowable for at least the reason that Roy and Rohner substantially fail to teach, suggest or disclose each and every features of the amended proposed independent claim 8 and newly added proposed independent claim 15. More specifically, both Roy and Rohner fail to teach, suggest or disclose a RTA process comprising at least the steps of "comparing a measured value of an operation parameter with a preset corresponding reference range of value of a normal RTA process; and proceeding a second RTA step by maintaining the reaction chamber at the main process temperature when the measured value of the operation parameter is within the corresponding reference range of value of the normal RTA process, wherein when the measured value of the operation parameter exceeds the preset corresponding reference range of value of the normal RTA process, the first RTA step is

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terminated without proceeding with the second RTA step", as required by the amended claims 8 and 15.

To the contrary, Rohner, in col. 6, lines 44-58, substantially discloses that the pyrometer uses the emissivity information to generate a first signal representative of the temperature of wafer 36. S-type thermocouple 44 and amplifier 46 measures guard temperature at step 76 and generates a second signal representative thereof. Thereafter, the first and second signals are compared to each other in step 80. If the temperatures as represented by the signals are sufficiently close to each other, the rapid thermal anneal cycle is allowed to proceed to completion in step 82. [If wafer temperature exceeds guard ring temperature by a predetermined amount, or vice versa, then at step 84 the rapid thermal anneal cycle is terminated and a warning is issued indicating that pyrometer 42 is improperly measuring wafer temperature and may need to be modified either by being repaired, recalibrated or replaced before further wafers are subsequently annealed].

In other words, Rohner substantially teaches comparing the temperature of the wafer with the temperature of guard ring measured during the RTA process; and terminating the RTA process when the temperature value of the wafer exceeds the guard ring temperature value. Accordingly, it is clear that the guard ring temperature, which is being measured during the RTA process, is not a preset temperature value range that is predetermined from a prior normal RTA process.

In other words, Applicants respectfully submit that Rohner fails to teach, suggest or hint a RTA process comprising at least a step of "comparing a measured

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value of an operation parameter with a preset corresponding reference range of value of a normal RTA process; and proceeding a second RTA step by maintaining the reaction chamber at the main process temperature when the measured value of the operation parameter is within the corresponding reference range of value of the normal RTA process, wherein when the measured value of the operation parameter exceeds the preset corresponding reference range of value of the normal RTA process, the first RTA step is terminated without proceeding with the second RTA step", as required by the amended claims 8 and 15. Instead Rohner substantially teaches comparing the temperature of the wafer with the temperature of guard ring, which is being measured during the RTA process; and terminating the RTA process when the temperature value of the wafer exceeds the guard ring temperature value. Accordingly, Rohner fails to meet the claimed invention in this regard.

Accordingly, Applicants respectfully submit that the combination of Roy and Rohner in a manner suggested by the Examiner cannot possibly achieve every features of the claimed invention as claimed in the proposed claims 8 and 15.

Therefore, Applicants respectfully submit that the prior arts of record, Roy and Rohner, either alone or in combination, fail to render the claimed invention obvious for at least the reasons discussed above. Therefore, the amended proposed independent claim 8 and the newly added proposed independent claim 15 patently define over Roy and Rohner and therefore claims 8 and 15 should be allowed.

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Claims 11-12 and 14, and claims 16-19, which depend from independent Claims 8 and 15, directly or indirectly, are also patentable over Roy and Rohner, at least because of their dependency from an allowable base claim.

For at least the foregoing reasons, Applicants respectfully submit that claims 11-12, 14 and 16-19 patently define over Roy and Rohner, and therefore should be allowed. Reconsideration and withdrawal of the above rejections is respectfully requested.

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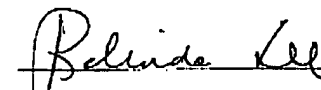
CONCLUSION

For at least the foregoing reasons, it is believed that all the pending claims 8, 10-14 and 16-19 of the present application patently define over the prior art and are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

Respectfully submitted

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